

Emission Reduction Plan for Ports and Goods Movement in California

(approved April 2006)



South Coast Air Quality Management District Governing Board Study Session

August 4, 2006 Diamond Bar



Air Resources Board
California Environmental Protection Agency

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Key Emission Sources

- Heavy diesel trucks
- Locomotives
- Ships
- Harbor craft
- Cargo handling equipment



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2005 Health Impacts from Goods Movement in South Coast

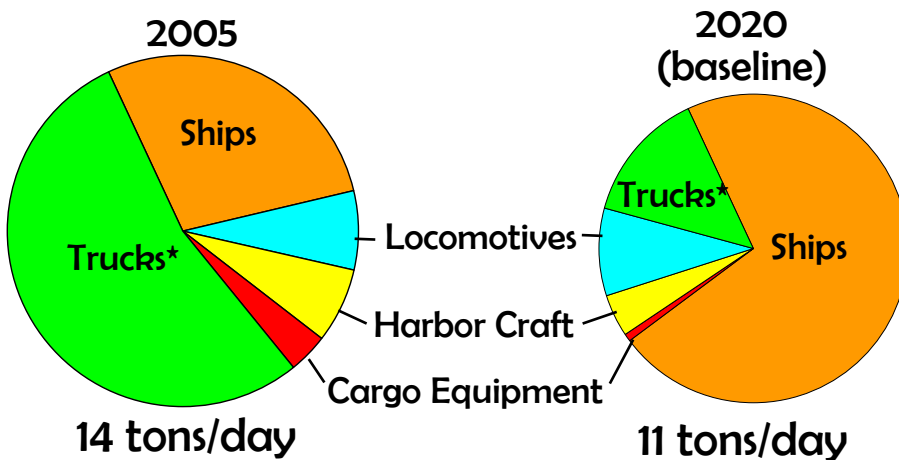
	<u>Cases/Year</u>
Premature death*	1,200
Hospital admissions (lung)	730
Hospital admissions (heart)	460
Acute bronchitis	2,900
Asthma/other respiratory	35,000
Absences/restricted days	2.3 million

**Uncertainty range is 360 to 2,100 deaths/year*

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Diesel PM from Goods Movement in South Coast (to 24 nm offshore)

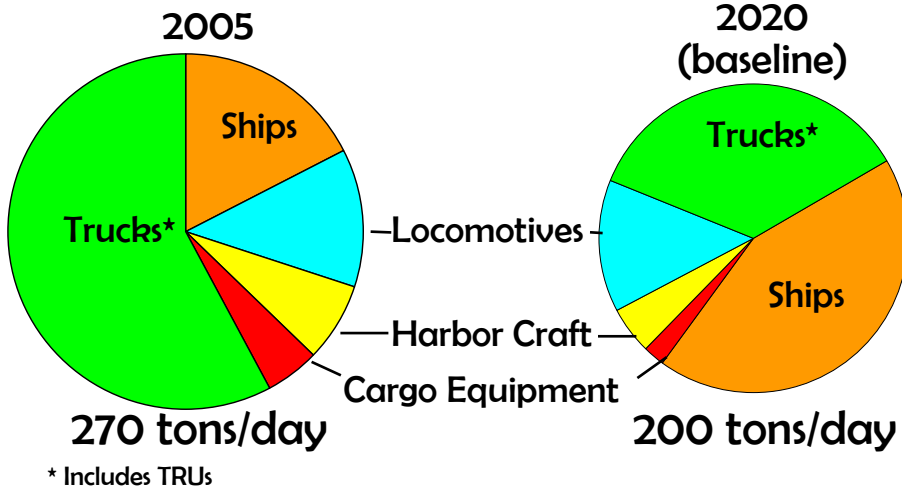


* Includes TRUs

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NO_x from Goods Movement in South Coast (to 24 nm offshore)



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ARB Goals for Goods Movement

Reverse growth in emissions

- By 2010, reduce emissions as much as possible, at least to 2001 levels

Reduce diesel PM risk

- Rapid reduction in community risk
- By 2020, reduce statewide risk 85%

Attain all federal standards

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Emission Reduction Strategies

- Cleaner engines and fuels
- Fleet modernization (retrofit or replace)
- Speed reduction and idling limits
- Shore-based power for ships and tugs
- Operational efficiencies
- Land use decisions
- Project and community specific mitigation
- Port programs

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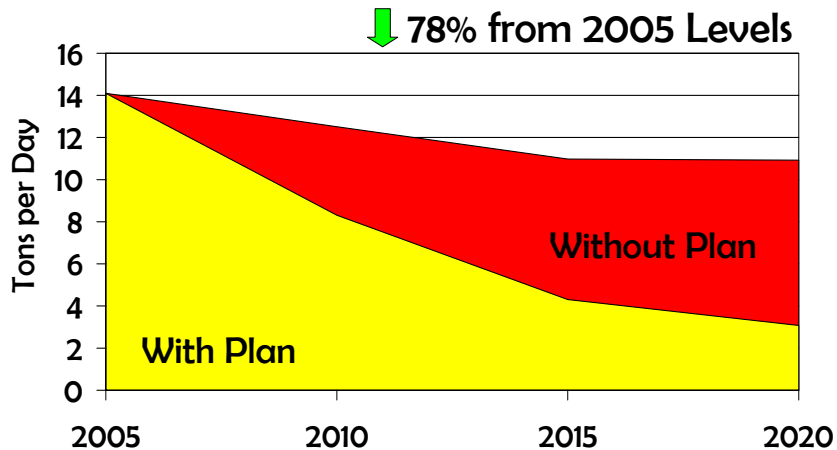
Statewide Benefits and Costs

- Goes further than no net increase by 2010, brings emissions 20-40% below 2001 levels
- Reduces diesel PM risk 85% by 2020
- Achieves preliminary South Coast clean air targets for 2015 and 2020
- Cumulative cost to implement plan strategies (2006-2020): \$6 to \$10 billion
- Plan provides \$3-8 in benefits for each \$1 spent on controls

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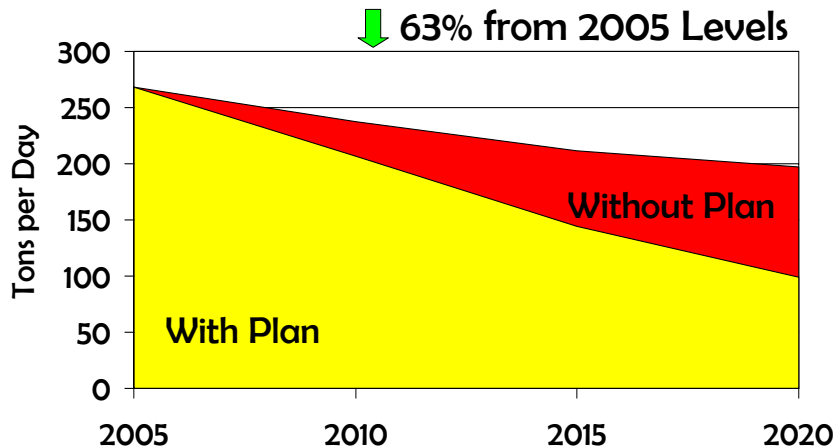
Impact on Goods Movement Emissions in South Coast -- Diesel PM



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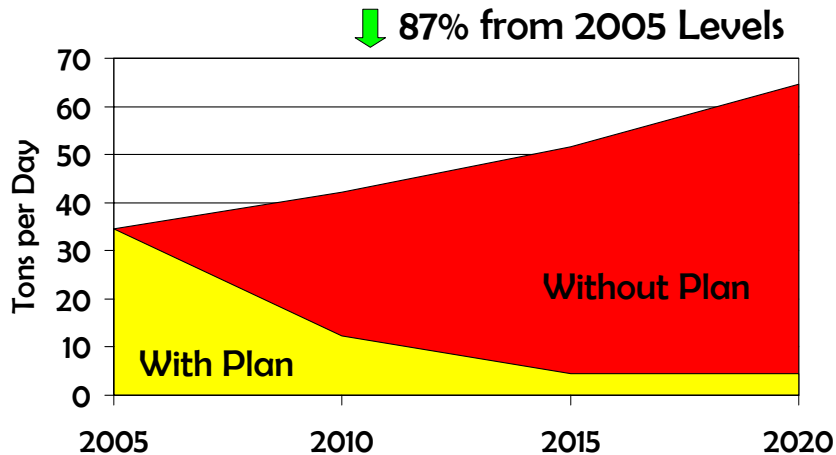
Impact on Goods Movement Emissions in South Coast – NOx



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Impact on Goods Movement Emissions in South Coast – SO_x



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Reducing Health Risk in South Coast

- Reduction in premature deaths attributed to emissions from goods movement:
 - 1,200 premature deaths/year currently
 - By 2020, over 800 premature deaths/year avoided by existing and planned controls
- Further localized risk reduction needed

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ARB Action – April 20, 2006

Board approved plan and directed staff to:

- Expedientiously pursue proposed ARB rules and other actions
- Work with port operators and others to reduce emissions and health risk
- Report back in November and every 6 months thereafter

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Recently Adopted ARB Rules

- ✓ Low sulfur fuel for trucks, equipment, harbor craft, in-state locomotives
- ✓ Truck idling limits
- ✓ International border trucks
- ✓ Ban on cruise ship incineration
- ✓ Marine auxiliary engine fuels
- ✓ Diesel cargo handling equipment
- ✓ Gas forklifts

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New ARB Rulemaking or Alternatives --- Public Process Underway

- ⊕ Port trucks
- ⊕ Privately-owned truck fleets
- ⊕ Shore power for ships and harbor craft
- ⊕ Ban on ship incineration (beyond cruise ships)
- ⊕ Harbor craft fleets & new engine standards

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New ARB Rulemaking or Alternatives --- Beginning Soon

- ⊕ Low sulfur fuel for ship main engines
- ⊕ Expanded ship speed reduction
- ⊕ Switcher/yard locomotive upgrades
- ⊕ “Green ship” construction and deployment to California service

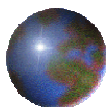
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Conclusions

- Need expeditious action to cut community risk
- Reducing goods movement emissions is key for new clean air plans
- ARB will use its full authority
- Partnerships are critical for success
- Will take large effort and resources from industry, agencies, and the public

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Expanded Description of Emission Reduction Strategies

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Ships In/Near Port

- ✓ ARB rule for clean auxiliary engine fuel
- Shore power or alternative technology
(40% of ship visits by 2010, 100% by 2015)
- Retrofit controls on auxiliary engines
- Additional vessel speed reductions

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Ships in California Coastal Waters

- Cleaner fuel for main engines
- Bring cleaner ships to California service
 - Step 1: Ships retrofitted with controls
(20% of visits by 2010, 50% by 2015)
 - Step 2: “Green” ships at 90% NOx/PM control
(25% of visits by 2015, 50% by 2020)
 - By 2020: 90% of visits by either new green or retrofitted ships

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Trucks



- ⚙️ Port “drayage” truck modernization program
 - Incentives, ARB rule, ports as gatekeepers
 - Need for comprehensive approach
- ⚙️ Statewide fleet rule for private trucks
- ✓ ARB rules for international trucks, anti-idling and low sulfur diesel

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Locomotives



- ⚙️ Upgrade switcher/local yard locomotives
- ⚙️ More stringent national locomotive standards
 - Tier 3 for new engines (90%+ PM/NOx), cleaner rebuilds, anti-idling, diagnostics
- ⚙️ Bring cleaner locomotives to California service
 - ✓ All Tier 2 engines in South Coast by 2010
 - 60% Tier 3 + cleaner rebuilt engines by 2015, 100% by 2020

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Harbor Craft

- ⌚ ARB fleet rule for existing engines
- ⌚ Shore-based electrical power in port
- ⌚ Tighter U.S. EPA or ARB emission standards for new engines



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Cargo Equipment

- ✓ ARB rule for new and existing *diesel* equipment
 - Replace all yard tractors with new, very low PM engines within 5 years
 - Ensure large reduction in NO_x
- ✓ ARB rule for new and existing *gas* forklifts and other large industrial equipment



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